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New Borders for Education: Redefining the Role and Sites of Education in the Future

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1. Studies of Identity, Mentality and Culture
2. Intercultural Cooperation in International Markets and Organisations
3. Migration, Spatial Change and the Globalisation of Cultures
4. International Politics and Culture

New Borders for Education:
Redefining the Role and Sites of Education in the Future

Challenges Facing Education
in the 21st Century

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INTRODUCTION

Over a quarter of a century ago, Alvin Toffler (1970) ushered the future into popular consciousness. He (and with belated acknowledgment, his wife, Heidi) claimed that one of the major qualitative differences between the present (i.e., then 1970) and the past is that not only has the scope and scale of change been extended, but its pace has been radically altered. Such acceleration of change has a profound effect on life. It 'lies behind the impermanence - the transience - that penetrates and tinctures our consciousness, radically affecting the way we relate to other people, to things, to the entire universe of ideas, art and values' (p.25). As the Tofflers predicted, change continues to characterize human existence, and their words remain apposite as we contemplate the next quarter century.

Social and educational planners preparing for the 21st century should be addressing two main issues. Firstly, they should recognize that many of the traditional 'borders'

that have impinged upon education are breaking down or are being redefined - trends which are likely to accelerate in the future. Already there are signs of dramatic changes occurring in the borders between nation-states and the global community, between nation-states and their component subcultures, between nation-states and the individual, between schools and their communities, between homes and schools, between education and work, between business/commerce and learning institutions, between formal and informal education, between vocational and academic education, between mandatory curricula and individual choice, between learners and teachers, between parents and children, between humans and machines, and among disciplines. As these new power relationships are negotiated, they will inevitably be accompanied by tensions, resistance and, in some places, disorder, chaos and threats to security and peace. These threats will affect educational institutions, which will increasingly become the site of disputation as interested parties seek to win the hearts and minds of the future generations. As in no other period in world history, education will play a crucial role in determining cultural and ideological positions taken within societies.

Secondly, as alluded to above, planners should recognize that the future will be characterized by change - rapid in some countries, gradual in others; systemic in some countries, piecemeal in others; advantageous and acceptable to some, but not to others; and accompanied by intended as well as unintended consequences. Such is the magnitude of change and the rapidity with which it is taking place in most societies, that educationists must undertake immediate, bold, and innovatory steps to re-engineer all aspects of the education system over which they have some measure of control. Failure to do so means abdicating responsibility for education in favor of other sectors of society and/or recognizing that in the more affluent societies individual learners will take increasing control of their own education. While this shift in power may be no bad thing in the sense of democratizing the educational process, such a transformation should occur as a deliberate policy choice rather than occurring by default.

But change is not easy to contemplate, let alone implement, as it inevitably involves modifying or completely replacing previous habits and existing power structures. As

Morgan (1986) notes, all change is a product of tensions between opposites. By analyzing those tensions, we have a powerful means of understanding how our world is unfolding and can appreciate contemporary events in that light. We may also have the will to consciously seek to avoid some changes or to introduce others. The changes outlined in this paper will inevitably lead to tensions between:

- *global and local:* how nations and individuals define the balance between world and national citizenship;
- *traditional and modern:* how nations and individuals blend their cultural traditions and customs with the
- culture s of the information age and the emerging 'syncretic' cultures which are arising from within- and between-country migration, mostly to urban areas;
- *centrifugal and centripetal interests (national vs regional and community):* how societies define what is best governed from the center and what is best governed at sub-national levels;
- *group and individual:* the extent to which individuals seek to retain their individuality in the context of increasing demands to adapt to globalized cultures and their various subcultural identities;
- *all diversities and some diversities:* the extent to which, in increasingly pluralistic societies, there will be a celebration, acceptance or mere tolerance of diversities, either within or between communities;
- *public and private:* the balance between public and private providers of services which, traditionally, were seen to be the responsibility of governments;
- *welfare state and individual responsibility:* the balance between the state and individual responsibility for welfare, health and education;
- *monopolies and contestability:* the extent to which the valuing of diversity will lead to demands for greater choice and competition, with a corresponding decline in public monopolies;
- *high choice and low choice:* the extent to which societies seek to maximize individual choice, especially when such choice may lead to or exacerbate social inequalities;

- *inclusion and separation:* the extent to which the exercise of choice may result in more or less inclusivist societies;
- *change-embracing and change-avoiding:* the extent to which societies, institutions and individuals recognize, embrace and adapt to change.

This paper will analyse five socio-political and technological trends and how they will impact on the education systems in a range of societies: globalization, demographics, pluralization, technology, and the nature of work

The scope of the paper will be the next 25 years. Predicting future trends in education in any particular society is fraught with difficulties, not least because its character is the resultant of a myriad of interacting forces. Chaos theory informs us, too, that even small initial perturbations in a system can have major repercussions in the long term. While it is impossible to predict with certainty what the future will be like, many aspects can be anticipated and prepared for and certain aspects are subject to some control. After all, the future is something which we are all creating right now through our actions and our inactions. Education, like no other field of human endeavor, is, or should be, focused on the future.

To analyse these trends and do justice to the wealth of literature associated with each one is admittedly an ambitious project - and one that will only briefly be developed in this paper.[1] As Boulding (1956, p.4) stated many years ago, 'All we can say about practically everything is almost nothing'. But a contrary view was expressed more recently by Hagerstrand (1986, p.193) who argued that 'It is urgent to take a fresh look at the matter and see if it is not possible after all to say something useful about at least a considerable amount of everything at the same time'. The latter view is taken by the author, if for no other reason that we expect educational planners and policy-makers to take 'everything' into account.

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[1] The Author is currently writing a book, tentatively entitled *New borders in education: Refinding the role and sites of education in the future*, which is under consideration by Lawrence Erlbaum

An important caveat must be registered from the outset: although there are many shared features among countries, it is critical that account be taken of the different circumstances and the different ways in which the macro factors outlined will impact on individual countries. Variations, some of considerable magnitude, can be expected of countries with different levels of economic development, with different resources, with different political systems, with different demographic profiles, with different degrees of cultural homogeneity, and with different histories.

GLOBALIZATION

This section will examine the contrasting positions taken by those who perceive a convergence of cultures (e.g. Fukuyama, 1992) and those who see the post-Cold War world leading to a reconfiguration along cultural lines (e.g. Huntington, 1996). The thesis explored is that there is probably truth in both positions and that whatever the mix of values that emerges in different countries, there will be profound implications for education.

The future will see an increasing emergence of global shared values as a result of the rapid development of communications, access to media and the free movements of goods and peoples. Related to this development will be the erosion of national sovereignty, with decisions taken by international bodies reducing the freedoms of nation-states to take decisions about affairs and issues within their own countries.

The trend towards globalization is the product of such factors as the emergence of a global economy, the growth of international trade (facilitated by such bodies as the World Trade Organization and its predecessor, the General Agreement on Trade and Tariffs), the deregulation of capital movement and the corresponding expansion of foreign direct investment, the development of transnational corporations, the increase in tourism, the development of intergovernmental and quasi supranational institutions, the establishment of regional political federations and alliances, and the expansion of transnational cultural links (Held, 1991; Oman, 1994; Ostry, 1995; Smelser, 1993). A significant part of this trend is the growth of global work, where

individuals and organizations are increasingly operating across national boundaries and creating strategic partnerships and alliances (O'Hara-Devereaux & Johanson, 1994).

To these economic and geopolitical factors, we must add two others. Firstly, the impact of increasing communications interconnectivity (Negroponte, 1995) will lead to many of the values of the nation-state giving way to those of both larger and smaller electronic communities, with their own cultures (Rheingold, 1993). Increasingly, we will socialise in digital neighborhoods and engage in electronic commerce on a global scale (Butler, 1996). Secondly, as Oman (1994) notes, environmental threats such as global warming and ozone depletion are increasingly seen as being beyond the capacity of even the most powerful governments acting alone to control or correct, thus requiring a concerted global response.

Cultural convergence is the thesis argued by Fukuyama (1992) in his controversial book, *The End of History and the Last Man,* in which he goes so far as to suggest that as countries modernize they must increasingly resemble one another, regardless of their historical origins or cultural inheritances. This homogenization reflects the universal economic nexus of modern consumerism, which centers around technologically-driven economic growth and the capitalist social relations necessary to produce and sustain it.

A contrary view is taken by Huntington (1996) in his book, *The Clash Of Civilizations and the Remaking of World Order,* when he argues that culture and cultural identities are shaping the patterns of cohesion, disintegration, and conflict in the post-Cold War world.

Whichever view prevails (and it is likely that there will be both convergence and divergence, depending on the factor that is being considered and the particular nation-state and its cultural make-up and history), it is clear that disputes are bound to occur, old tensions will continue and new ones will appear. Just as these will impact on education, so too will (or should) education play an increasingly important role in helping to minimize tensions in the future by promoting mutual

understanding, peaceful interchange and harmony. In education, as in other areas of human activity, there will be ongoing, if not increased, tensions between the trend towards international homogenization and the retention of national or regional cultural identities. This will lead to national and sub-national governments redefining what they consider to be their core, non-negotiable societal and educational values, in the light of any global consensual values.

The trend towards globalization is seen by some commentators as changing the notion of democracy. Held (1991), for example, notes that as many human activities are increasingly organized on a global level, democracy comes under threat. He explains this in part by noting that one of the underlying premises of democracies is that they can be treated as essentially self-contained units (i.e., nation-states), clearly demarcated from one another, giving expression to the interplay of forces operating within them, and reflecting what he terms 'a national community of fate' (p.202). Such a view of governance - and hence the very notion of democracy - is increasingly being challenged by the intensification of regional or global interconnections. The meaning of national democratic decision-making will increasingly be considered in the context of a complex international society with a huge range of regional and global institutions which transcend national boundaries. Held (1991) summarizes this trend as follows:

> *..the operation of states in an ever more complex international system both limits their autonomy and impinges increasingly upon their sovereignty.* (emphasis in original) Any conception of sovereignty which interprets it as an illimitable and indivisible form of public power is undermined. Sovereignty itself has to be conceived today as already divided among a number of agencies - national, regional and international - and limited by the very nature of this plurality (p. 222).

Reich (1991) takes this theme even further, stating somewhat hyperbolically that in the future global society,

> There will be no *national* products or technologies, no national corporations, no national industries. There will be no longer be national economies, at least as we have come to understand that concept. All that will remain rooted within the national borders are the people who comprise a nation. Each nation's primary assets will be its citizens' skills and insights. Each nation's primary assets will be to cope with the centrifugal forces of the global economy which tear at the ties binding citizens together - bestowing even greater wealth on the most skilled and insightful, while consigning the less skilled to a declining standard of living (p.3).

Notwithstanding Reich's prognostication - one with which other writers such as Hirst & Thompson (1995) would disagree - the important point is not the demise of the

nation-state, *per se*, but more an acknowledgment of 'a challenge to the era of hegemonic states' (Held, 1991, p.211).

In terms of education, recent years have seen what McNeely & Cha (1994) refer to as 'a remarkable degree of convergence in both educational ideology and educational structure across all types of nation states'. This phenomenon has also been noted by writers such as Adick (1992) and Meyer, Kamens, & Benevot (1992), who observe that 'modern' schooling systems have already spread throughout the world at the expense of 'autochthonous' systems. The 'modern' form has in common features such as:

- a more or less differentiated school system with sub-divisions into school classes, levels and graduation qualifications;
- teaching according to a pre-arranged curriculum;
- a systematic differentiation between teaching and learning, so that professional staff of teachers appears before a class of school children at scheduled time intervals;
- a state controlled, public, legal regulation of educational practices in schools etc (Adick, 1992).

To a large extent, this convergence reflects the trend towards nation-states becoming increasingly subject to world-level ideological prescriptions and practices, as mediated by such agencies as the UN, The World Bank and OECD. Such agencies exercise considerable authority, according to McNeely and Cha, influencing national systems through a number of normative and rule-creating activities, four in particular. Firstly, international organizations act as a major forum for the transnational exchange of ideas and information via their publications, through the provision of consultants, and by sponsoring various types of conferences, meetings, and workshops. Secondly, in order to become members of these international organizations, countries have to sign up to their charters and constitutions, which typically contain professions of adherence to global principles, norms, and procedures. A third and related means of bringing about international convergence can be found in standard-setting instruments such as declarations and recommendations. Although these may not be legally binding, 'they may be both inspirational and educational'. Finally, and in some circumstance perhaps most importantly, international organizations exert their influence through direct financial assistance or through the provision of development experts, both of which are

usually linked to the adoption of certain ideas and policies. Two instances will suffice.

Firstly, one of the major determinants of international convergence of policies and practices in social areas is undoubtedly The W orld Bank. As noted by Torres (1995-96), The World Bank is already a major player in the transnationalization of knowledge, influencing the discourse of education and educational reforms, not only in developing countries, but worldwide. The underlying ideology thus projected is neoliberalism. The World Bank made its first loan for education in 1963 and is now the largest single source of external financing for education in developing countries, accounting for about a quarter of all such aid (The World Bank, 1995). In developing countries, it has the ultimate influence to bring about change: money. In its own words, 'Bank financing will generally be designed to leverage spending and policy change by national authorities' (The World Bank, 1995, pp.14-15). Its priorities for educational reform therefore bear close study in the broader context of forces underlying the transfer of ideology and knowledge. In a recent publication, these were summarized as being in six key areas: (a) giving higher priority to education, (b) setting priorities with reference to outcomes, (c) emphasizing basic education, (d) attending to equity, (e) involving households in the governance of schools, and (f) granting schools the autonomy to use instructional inputs according to local school and community conditions, with accountability to parents and communities.

Secondly, the UN agencies aspire to influence global values. At a broad level, the World Commission on Culture and Development (1995) has recently identified 'recurrent themes that appear in nearly all cultural traditions', and goes on to argue that these could 'serve as an inspiration for a global ethics' (p.36). Five such principles are adduced: human rights and responsibilities, democracy and the elements of civil society, the protection of minorities, commitment to peaceful conflict resolution and fair negotiation, and equity within and between generations. With a more specifically educational focus, the recent report of the International Commission on Education for the Twenty-first Century (UNESCO, 1996) put forward the notion that quality education should have four pillars:

- *learning to know*: broad general education and in-depth work on selected subjects, learning to learn to continue education through life;
- *learning to do*: ability to face a variety of situations, often unforeseen; to work in teams - hence work experience incorporated with education;
- *learning to be*: exercising independence and judgment, combined with sense of personal responsibility for attaining common goals; understanding and realizing one's talents: memory, reasoning, imagination, aesthetic sense, physical, leadership;
- *learning to live together*: among individuals, groups, nations; developing an understanding of others and their history, traditions and spirituality (pp.7-8).

Of these pillars, the fourth is given priority. In the words of the Commission,

> the far-reaching changes the traditional patterns of human existence require of us a better understanding of other people and the world at large. There is a need for mutual understanding, peaceful interchange and, indeed, harmony - the very things that are most lacking in our world today (p.7).

International bodies and world and regional forums will thus play an increasing role in determining the values, aims and even the curriculum of education. As this role increases, however, there will be disputation as to how such power is exercised, both in terms of who represents the views of nation-states and how decisions are arrived at in international forums. There will be a rising concern about the direct and indirect influences exercised by dominant world powers - particularly the United States. Nevertheless, most education systems around the world now seem to be facing up to the issue of globalization and are seeking to develop strategies which take this phenomenon into account. Later sections will address how this trend is forcing educational policy-makers to consider the implications of technology and the changing nature of work as they plan to make their country more competitive in the global marketplace. In that sense, there are and will be strong impulses towards cultural convergence. But, is this a 'good thing'? As Barth (1996), reminds us, 'Global cultural diversity represents a precious form of capital or resource, comparable to biodiversity' (p.26).

DEMOGRAPHIC TRENDS

In the first few decades of the 21st century, demographic transitions, all of which have been under way for some time, will lead to many changes in the social structures of nation-states and the transactions that take place within them. Some even have the potential to influence the relationships between nation states. All will

impact on the resourcing, content, sites and processes of education. As Pool & Bedford (1996, p.2) note, 'Demographic transition, particularly its dynamics, constitutes perhaps the most radical form of social change a society may face'. They further note that while economic inequalities appear to be growing, there is a large degree of demographic convergence, with significant decreases in both fertility and mortality across most of the world outside Africa.

This section will outline four inter-related demographic transitions: fertility, family formation, mortality, and migration and will conclude with some comments on the implications of population projections for the notion of a 'whole world economy'.

Fertility Transition

Over the past two centuries, the fertility rate - the number of children an average woman will bear over her lifetime - has steadily declined in developed countries (Pool & Bedford, 1996). In the United States, for example, the rate has gone from 7.0 in 1800, to 3.6 in 1900, to roughly 2.0 today (US Council of Economic Advisers (1997). Major exceptions to this trend occurred with the 'baby bust' associated with the Great Depression and World War II, when the fertility rate was below replacement level (i.e., currently 2.05 births per women in low mortality populations) and with the post-World War II 'baby boom' which lasted until the early 1970s. However, these two events are generally perceived to be but temporary aberrations in a long-run trend of declining fertility. The rate of this decline has been particularly marked over the past four decades, with fertility rates across all industrialized countries plummeting from 2.77 in 1955-1960 to 1.91 in 1975-1980 and 1.70 in 1990-1995 (Lutz, 1996).

In more recent times, this major demographic transition has been manifested in most developing countries as well, to the point that after reviewing the evidence from 1960 to 1995, Cleland (1996) concluded that 'sustained fertility decline in the Third World is now the norm rather than the exception' (p.69). Notwithstanding this trend, the impact of declining fertility in these countries is offset by other demographic forces such as declining mortality and the present number people in the reproductive

ages so that in, in many developing countries, its impact will not be felt until well into the next century.

This widespread fertility transition should not be allowed to obscure significant between-country and within-country variations. An example of the former is the occurrence in several countries, mainly industrialized ones, of fertility rates that are considerably below replacement. Those with fertility rates below 1.50 include Italy, Spain, Germany, Austria, Switzerland, Greece, Portugal, Japan, Hong Kong, Macau, South Korea, Taiwan and Singapore, as well as many of the East Europe transition countries (especially Bulgaria, the Czechoslovak Republic, Latvia, Romania, Ukraine, and Croatia (Cleland, 1996; Lutz, 1996; McDonald, 1997). Indeed, in these countries, according to McDonald (1997), present levels of fertility are so low that, if maintained in the long term, they would threaten the future existence of the peoples concerned. For example, with the level of fertility applying in 1995, Italy's, population size would drop in just 100 years to only 14 percent of its current level, Spain to 15 percent Germany to 17 percent Greece to 26 percent, and Japan to 28 percent. Within-country variation in fertility rates is present in many, if not most countries. For example, in India transition is most advanced in the southern states, notably Kerala and Tamil Nadu with fertility rates of 2.0 and 2.5 respectively, whereas in most northern states, fertility remains high with rates ranging between 3.6 and 4.8 (Cleland, 1996).

What then accounts for this almost universal convergence towards lowered fertility rates? Here it is helpful to examine possible reasons for the very low fertility rates among and within certain countries, as noted above. Various factors seem to be associated with this phenomenon: (a) in some low fertility countries child-bearing (or at least having more than one or two children) leads to significant psychic and economic opportunity costs if women can no longer participate in paid employment, this being particularly the case when working conditions such as the availability of part-time work, liberal conditions for absence and the provision of quality child care are not put in place; (b) in some countries, proscriptions against relationships alternative to marriage and the continuance of generally socially conservative attitudes towards family functioning (e.g., adherence to a 'male breadwinner' model,

rather than a 'gender equity' model) inhibit an increasing number of young people from marrying and having children; (c) the direct economic costs of having children, a factor that is becoming increasingly an issue in those countries that have embraced the new liberal economics where, for example, there is a greater emphasis on 'user pay' for education, health and welfare services and where employment conditions have become less flexible; (d) the rising age of marriage, particularly in the low fertility countries in East Asia; (e) an increasing acceptance and use of effective birth control measures; (f) the overall status of women (for example, Cleland (1996) ascribes the different fertility rates within India largely to the differential literacy rates among women: 87 percent in Kerala vs 20-30 percent in the north); (g) a trend towards individualism and mobility which means that more and more people are increasingly reluctant to enter into long-term commitments such as marriage and/or the raising of children; and (h) the availability of housing space, a factor that will take on increasing import with the rapid urbanization taking place in most societies (Cleland, 1996; Gustavsson and Stafford 1994; Lutz, 1996; McDonald, 1997)

The educational implications of these trends vary from country to country. Three main categories need to be considered: countries with high fertility rates, but with policies to decrease them more rapidly than their current trajectories; countries whose fertility rates are considered to be optimal, or to be approaching optimal levels; and countries who wish to increase their fertility rates. Clearly, the social and educational implications will vary according to whichever grouping is being considered. For the first group, educational programs would aim to increase the educational levels of girls and women (there are, of course, other imperatives why this should occur), include instruction in birth control principles and procedures, and seek to encourage the development of greater gender equity in both the content and process of education. For the third group, it means supporting through favorable employment and social conditions the continued participation of women in the workforce, the provision of expanded quality preschool and after-school childcare, educating society into seeing children as valuable resources for future economic and psychic well-being, and re-examining the wisdom of education fees. The second group will need to adopt a mix of these policies, depending how close they are to their optimal fertility levels.

Family Formation Transition

In many developed countries, family formation ('how and when couples form a union, have children, and then see the family dissolve through attrition and rupture' (Pool & Bedford, 1996, p.6)) has undergone a major changes over the past century or so, particularly in the last 30 years. These include (a) the change from the relatively early and relatively universal acceptance of registered marriage of the 'baby boom' era to the more recent later marriage and increasing preference for cohabitation as the first form of conjugal union (Pool & Bedford, 1996); (b) the multiplicity of kinship types in the modern family; (c) the movement away from patriarchal authority, to a greater emphasis on the personal autonomy of all household members; (d) the greatly increased participation of mothers in the labor force (e.g., in the United States in 1960 only 18.7 percent of married women with preschool children were in the workforce, compared with 61.7 percent in 1994); (e) an increasing trend towards 'one-parent' families, especially among minority populations; and (f) increased rates of divorce (Furstenburg, 1997).

These trends have significance for education. Teachers can no longer assume that most children live in traditional nuclear families with a 'mother' and a 'father'; instead diverse and rapidly changing family forms must be taken into account and given full recognition, for example in the classroom discourse and in the selection of reading material. An increasing number of families lack the resources to take on what used to be considered the sole prerogative of families, leaving schools and other educational settings as the only universally accessed institution (at least in developed countries) to fill the vacuum - a situation that will increasingly lead to the formation of 'full service' schools (Dryfoos, 1996) in which there is 'school-linked services integration' (Kagan & Neville, 1993). This would see schools as one-stop centers where many of the educational, psychological, health, recreational, juvenile justice, religious and social requirements of students and their families are addressed in a holistic fashion. Here, too, adequate childcare and after-school and summer activities should be provided to support those families who find themselves under pressure.

Mortality Transition

Paralleling the fertility transition, there has been a significant decrease in mortality levels in many parts of the world, particularly in developed countries. In most developing countries, too, there has been a significant decline in mortality rates. A major exception to this latter trend is the result of the impact of AIDS which began spreading in the early 1980s. This disease has currently reached a level of 2.4 million new HIV infections each year among adults, with 1 million in Asia and 1 million in Africa, particularly in sub-Sahara Africa, and a cumulative total world-wide of 18.5 million (WHO, 1995). This latter figure is expected to grow to 30-40 million by the year 2000 (WHO, 1994), with some estimates even higher. Bongaarts (1996) reviews literature which predicts even higher levels, noting model simulations of parts of Africa in which a majority of adults could become infected. He concludes, however. that although the AIDS epidemic will have a significant moderating effect on population in sub-Sahara Africa, even under high variant projections the overall population growth rate remains high.

In developed count taken together, have resulted in a gradual upward shift in the age structures over the last two centuries, with 40 percent aged 0-14 and less than 7 percent 65+ some 200 years ago, compared with less than 20 percent and more than 15 percent, respectively, today (Loriaux, 1990; Pool & Bedford, 1996). In the United States, the latter figure is expected to reach 23 percent by 2030 (Fosler, 1992). The west is thus moving to form an age structure in the shape of an inverted pyramid (McDonald, 1997). Expressed another way, according to the US Council of Economic Advisors on the Challenge of an Aging Population, when Social Security was enacted in 1935, life expectancy at 65 was about 12 years for men and 13 years for women. Now, those figures are 15 and 19 years respectively and by 2070 they are projected to be 18 and 22 years (US Council of Economic Advisers (1997).

Several factors contribute to the aging of a population, according to Pool & Bedford (1996): declines in fertility means that there are fewer and fewer in each birth cohort ('structural aging'); low mortality produces improved survivorship over younger and middle age, resulting in more people reaching older ages ('momentum aging'); and,

since 1970 or so, improved survivorship has resulted from health care advances.

The third of these factors draws attention to what could be considered a transition in its own right - the epidemiological transition. As noted by Omran (1982), at the start of this transition, communicable diseases cause most death, the greatest force of mortality falls at the youngest ages and female life expectancy may be lower than male. By the last stages of the transition, non-communicable causes dominate, the force of mortality falls at the oldest ages and female longevity significantly exceeds male. Developed countries have effectively made this transition and many developing countries are making significant advances in this direction.

Pool & Bedford (1996) note that his transition is affected by both socioeconomic and bio-medical factors. At all periods of the transition both operate, but the balance between them shifts, with socio-economic factors being the more important earlier on, and bio-medical factors more significant in later phases.

On the horizon are even more significant advances in understanding human biology, especially in genetics. Leading the way in these developments will be the Human Genome Project, the outcomes of which will increase understanding of the precise nature of the changes in genetic material associated with various diseases, and also, in many cases, to new methods of treatment. A major application in this field will see the discovery of the genetic etiology of many disabling conditions. At a metaphysical level, these advances have the capacity to alter the way we see ourselves. Kavka (1994, p.173), for example, speculates that 'we will see *ourselves* - not God, not chance, not even nature - as ultimately responsible for the human future' an awareness which is a prescription for 'a tormented collective soul ... and ... intense political conflict'.

The increasing absolute numbers and proportion of elderly persons will have considerable repercussions on all aspects of society, not least of which education. One of the key issues is whether welfare and health entitlements based on age can be sustained in the future. As noted by the US Council of Economic Advisors on the Challenge of an Aging Population, when the large baby boom cohorts enter the age

of retirement, federal outlays on the Social Security program and on health programs (Medicare and Medicaid) will rise sharply. While current expenditure on these key social programs represents less than 9 percent of GDP, that proportion is projected to rise to 19 percent in 2050 and to 22 percent in 2070. These figures compare with the 18 percent of GDP currently raised through federal revenues. Thus, unless reforms are instituted, the three major entitlement programs could consume all government revenues by 2050 and exceed them thereafter. This would affect all other areas of government spending, including education. A second issue is the challenge to education providers to set up relevant education opportunities for elderly people. In the future they will constitute an increasing market, with unique expectations as to content and delivery of education. Meeting their educational needs could well force educators to adapt new paradigms of instruction, with the potential for flow-on effects throughout education systems. A third issue is how can the experience and skills of retired people continue to be utilized, for example in education? Voluntary work in schools and in out-of-school programs, if properly organized and appropriately recognized, could be an avenue of mutual benefit to young and old alike.

MIGRATION

In recent years, many countries, especially developed countries, have experienced an increase in their ethnic diversity resulting from migration - a trend that seems likely to continue. As noted by Arizpe (1996), over the last three decades, the United States heads the list of countries of immigration, having received 7.3 million legal and 2.7 million illegal immigrants. Between 1980 and 1992, Western Europe as a whole received some 15 million immigrants, while the Persian Gulf received 5.1 million. According to the United Nations High Commission for Refugees (UNFPA, 1993), it is estimated that 70 million people, mostly from developing countries, are working, legally or illegally, in other countries and that over one million people emigrate permanently to other countries and close to that number seek asylum each year. This massive movement of people reflects several factors: decolonization, forced movement of people through war and political repression, transport

improvements, economic incentives and family reunions.

For the United States, the consequences of this movement of people, coupled with differential fertility rates among different ethnic groups, are that African Americans are expected to grow from 12.7% of the population in 1996 to 14.4% in 2030, Hispanics from 10.5% to 18.9%, and Asian and Pacific Island people from 3.7% to 7.0% (US Bureau of the Census, 1997). Currently, the foreign-born population of the US stands at 24.5 million, or 9.3 percent. (US Commission on Immigration Reform, 1995)

The geographical spread and mobility of the world population has socioeconomic, political and cultural significance (Arizpe, 1996; Castles & Miller, 1993; Pool & Bedford, 1996). For example, Arizpe notes that 'such massive population shifts, coupled with the expansion of media and telecommunications, will completely alter cultural patterns, behaviour and generational forms of cultural transmission' (p.96), ushering in an era in which the central processes will be 'those of transhumant cultures and neo-cultures - new syncretic cultures, most of them urban' (p.97).

Ethnic diversification also raises issues of major import for education, including the role of multicultural vs assimilationist policies and how these impact on curriculum development, the representation of different ethnic groups in tertiary education and in different kinds of work, and affirmative action and anti-racism programs. These will be discussed in more detail in section 5.

Seven Billion, Nine Billion ... People

Even with the most rapidly declining fertility scenario, it is reasonable to assume that the population of the world will increase from just under 6 billion in 1998 to just over 7.5 billion by 2020 and nearly 9 billion by 2040 (U.S. Bureau of the Census, 1997). The intersection of this trend with what Barth (1996) and Goodland et al. (1991) call the 'full world economy' poses enormous economic, environmental and social challenges that will become increasingly acute in the coming decades. In brief, the 'full world economy' theory argues that industrial productive activity has

passed a fateful threshold of scale in relation to the global ecosystem. In the 'empty world economy', such as we have known until recently, the ecosystem's 'source functions' (i.e., energy and natural resources) have been treated as infinitely replenishable and capable of fulfilling the economic subsystem's needs, while its 'sink functions' (i.e., its capacity to dissipate and recycle waste and pollution) have been assumed to have almost infinite capacity. In recent years, both of these assumptions have been negated and there is a growing recognition that 'the economic subsystem has grown swiftly while the global ecosystem remains finite or even marginally reduced in scale' (Barth, 1996, p.22). Thus, the notion of a 'full world economy' in which the finiteness of natural resources and the limits of the biosphere to absorb waste is increasingly being advocated and slowly being recognized.

Such a transition in economic thinking - if it is embraced - will have considerable consequences, not least for education as new generations are prepared for life in a full world economy. Quite simply, we will have to recognize that there are limits to industrial production and to the materialism and consumerism that drives a good deal of it. We will have to take much more seriously the protection of the biosphere on which we live and on which we hope our descendants will also be able to live. And then there is the moral question of how to provide opportunities for the poor populations of the world, especially in developing countries, to access even the basic commodities of current technical and industrial production. It is all very well to make pleas to 'save the planet' and adopt a full world economic paradigm when there are such enormous discrepancies between those who currently, and are likely to continue, enjoying so many of the fruits of empty world economic thinking, and those who are deprived of them. To Barth (1996), this raises questions of the contradictions inherent in third world development programs. He argues that it would be immoral simply to transfer lifestyles of the North to the South. Instead, 'It is imperative..[to] find effective, practical ways to enhance the integrity of other lifestyles to resist these trends and re-create the forces of production and visions of the good life that are more benign in their consequences in a full world' (p.28). However, it could well be argued that the genie is out of the bottle and it would be impossible, if not presumptuous, for the North to seek now to impose such positions

on the South - and on communities within their own borders.

PLURALIZATION

Paralleling the trend toward globalization will be a second trend, in which societies (at least in the West) will become increasingly diverse, with an increasing range of accessible sub-cultural options and a growing divergence of specialist and subcultural discourses. Just as the nation-state is being eroded from above, as it were, so too is its character being modified from pressures from below, especially when its boundaries are based on arbitrary past political decisions. According to Smelser (1993), for example, the state's boundaries are being increasingly contested by 'the efflorescence and revitalization of solidarity groupings with multiple bases - regional, linguistic, religious, ethnic, gender and life-style - as well as a bewildering array of novel social movements that generate their own solidarity' (p.3). In a similar vein, the New London Group (1996) argues that we live in an environment where subcultural differences - differences of identity and affiliation - are becoming more and more significant. Gender, ethnicity, generation and sexual orientation are just a few of the markers of those differences. Contributing to this notion of increasingly decentralized and diversified societies is the emergence of less regulated, multi-channel media systems, with their burgeoning variety of text forms (Negroponte, 1995). This trend is apparent in the effects of information technology on facilitating networking among geographically dispersed minority groups, both within nation-states and among groups from different countries (for example, indigenous cultures). A similar point had been made earlier by Toffler (1981, 1990) who, in describing the 'third wave' of the information age, referred to its effects in terms of the 'demassification' and 'de-synchronization' of society, in which societies cease to be undifferentiated masses and become instead a collection of minority interests.

A related factor leading to the erosion of the nation-state, according to the New London Group (1996), is that over the past two decades the century-long trend towards an expanding, interventionist welfare state has been reversed. The group posits that recent trends towards economic rationalism, privatization, deregulation

and the transformation of public institutions such as schools so that they operate according to market logic, are changes that are part of a global shift coinciding with the end of the Cold War. The argument between communism and capitalism, they say, turned out to be one about the role of the state in society. In just a decade or so, a new world order of liberalism that eschews the primacy of the state has prevailed globally.

These trends may ultimately lead to what Nozick (1976), writing from a radical libertarian perspective, portrays as a greatly diminished nation state. Such a state would retain responsibility only for the physical and legal protection of its citizens and would leave all other matters for individual decision. Thus would a framework for 'utopia' be established, with individuals being free to determine its features for themselves. Nozick suggests that in such a state, various communities would evolve, where groups of people shared common interests and concerns. This would assume that individuals have developed as autonomous persons who are capable of forming a conception of their own good, that they have developed a capacity for rational decision-making. As well, Nozick and others writing from a libertarian perspective see the market as being the most efficient and effective provider of social justice; if left to operate freely it will fairly deliver resources. It is not for the state to interfere in such processes, but rather to recognize that people are entitled to what they produce. Nozick's ultimate extension of the notion of pluralism to individualism, with the nation-state playing virtually no role in social and economic redistribution, has been severely criticized by writers who espouse the notions of social justice advanced by John Rawls (1973). For example, Rizvi and Lingard (1993) note that Rawls advances two principles: (i) each person should have the most extensive basic liberty compatible with similar liberty for others, and (ii) there should be equal distribution of primary social goods, unless unequal distribution is to the advantage of the least favored.

The New London Group (1996) argues that the above trend towards pluralization undermines the concept of collective audience and common culture, at least in Western societies. Indeed, it promotes the opposite: an increasing range of accessible subcultural options and the growing divergence of specialist and subcultural

discourses. This shift means that singular national cultures will have less hold than they once did. Instead of cultural homogeneity, there will be an increasing amount of cultural contestation. As it becomes harder for people to put down roots at all levels of society - in the nation-state, and even in local communities - there will be a consequent diminution of a sense of identity.

Trends towards regionalism or localism will impact differentially on different communities, with some being capable and motivated to respond to the opportunities for increased self determination and others not. This point has been recently articulated by Putnam (1993) who, in his study of civic traditions in modern Italy, outlines vast differences among regions. These differences, he claims, reflect the degree of social connectedness that is present.

It would be tempting, but dangerous, to think of the trend towards pluralism as justifying the acceptance of all diversities, either as expressed as groups or individually. Increasingly, the very existence of particular nation-states will be tested in terms of how they reconcile the need to tolerate differences within society, while at the same time being prepared to intervene to counteract or eliminate differences based on inequalities, especially those based on poverty and disadvantage. Notwithstanding the trend towards the diversification of society and the devolution of power, it is likely societies will maintain their 'core values', i.e., those values which reflect the strong cultural underpinnings to particular nation-states.

Some people are taking a critical view of pluralization, and its attendant 'multiculturalism', both in terms of its inevitability and its desirability. Education will thus continue to be an arena for considerable debate as to the character of society. In most countries, the fragmentation of the nation-state will be contested, and schools will be one of the major arenas for such contestation, with curriculum, teaching, governance and accountability coming under increasing scrutiny. A recent example of this is provided in the final report of the US Commission on Immigration Reform (1995), in which there was a call for the 'Americanization' of immigrants in order that they could be better integrated into national life. This would require increased emphases on English classes, naturalization and civics education and

asserting the primacy of individual rights over the collective. In the words of the Commission:

> Americanization - by which we mean cultivation of a shared commitment to the American values of liberty, democracy, and equal opportunity - is desirable and possible regardless of the nationality, native language, or religious background of immigrants and their children.

Where truly pluralistic societies served by a pluralistic education systems emerge, there will be a special obligation on schools to ensure that children develop as autonomous persons who are capable of forming a conception of their own good and a capacity for rational decision-making. Otherwise they would be unprepared to make good decisions on their own behalf about the kind of community they wanted to belong to. In turn, this may require the state to intervene rather more in the design and conduct of education than would be seen as appropriate by those who take an extreme libertarian position. The core values of an education system would thus have to include a concern for critical thinking and for civics education. In the pluralistic societies of the future, there will be a diversity of public and private educational programs and institutions. Increasingly, subcultures within any given society will seek to have their interests reflected in education and will seek not only to establish their own learning institutions, but also their own curricula. In this socio-political context, schools will have an important role in ensuring that diversity contributes to the wider good of society as a whole. Schools will play an increasing role as arbiters of difference.

TECHNOLOGIZATION[2]

Technology is perhaps the most significant of the factors which will drive the future. In the next 25 years - and beyond- advances in technology will have profound effects on all societies. Information and communications technology (ICT) will revolutionize the ways in which we gather, manipulate and communicate information in our work, leisure and education. With the substitution of digital for analog coding, and of fiber optics for copper wiring, information is becoming faster,

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[2] This section draws upon Mitchell (1997a).

easier and cheaper to gather, store and transmit. The Internet, with its access to e-mail and the World Wide Web, is the prime current exemplar of how technology facilitates one's capacity to independently reach out and find information. The introduction of e-mail has dramatically changed the character and speed of communication, with participants able to simultaneously exchange information with a large number of people in a way which uniquely combines ease, speed, immediacy and (increasingly) cheapness.

Several features of the Web make up its special character, according to Burbules (1995). Firstly, like no other form of information sharing, the Web is fundamentally egalitarian in that it gives all people with access to it a forum for expressing their views and for seeking and sharing information. Interactive media will soon make it possible not only to send and receive information, but to engage in dialogue discussion and to transmit information and knowledge unconstrained by distance or operating time. In turn, this facilitates the establishment of 'virtual' communities of common interest. Secondly, because every node in the Web is linkable to any other node; the structure is decentered and non hierarchical. Thirdly, the Web has multimedia capability (i.e., it is able to integrate multiple sources and forms of information), a feature which has wide-ranging ramifications for how people access and remember information, for how they conduct their everyday lives and for what they expect of entertainment and education. Networked, multimedia systems will provide general, efficient, enduring and multi-modal (as distinct from a hitherto predominantly verbal) access to cultural works of nearly every form conceivable (McClintock 1995). A related feature of computers arises from their capacity to be networked or connected with one another, thus facilitating informational linkages.

Computers are undermining the hegemony of the printed book as a means of representing culture. This case is persuasively argued by McClintock (1995) who asserts that the content of the curriculum, the design of the classroom, the organization of the school day, the motivational strategies employed, the scope and sequence of textbooks, and the definition of good teaching practice, have remained very stable over the past 400 years. The reason for this is rather simple: the character and limitations of printed materials have remained substantially fixed and have

determined the educational provisions designed to employ them. Thus, reliance on textbooks necessitated the division of knowledge into distinct subjects, the organization of the students into grade levels based on similarities of age or intellectual ability, the structuring of the school year into fixed days for attendance at a particular site, the breaking up of the school day into periods of fixed length, and the requirement that students work in unison and at the same pace from a prescribed text.

ICT will have an increasing impact on the formation and maintenance of communities. In recent times television has isolated many from other human beings. This trend is likely to be maintained, with communities becoming less intimate and more isolated as increasing use of the Internet reduces physical contact. As the Internet extends its sway, people will be enabled to form and maintain 'virtual communities' which are not based on geographic proximity. These are communities comprising like-minded people who can maintain instant and relatively inexpensive contact with each other. The new ICTs will enable challenges to the borders between the global community and the nation-state, between the nation-state and its constituent sub-cultures, between sub-cultures themselves, and between all of these entities and the individual. At the heart of these challenges is the tension between centrifugal, or centralizing influences, and centripetal, or decentralizing influences. For example, the trend toward the Internet creating a global culture may well be resisted as nation-states and the subcultures embedded within them seek to assert the uniqueness of their own identities. In dealing with these issues of authority and control of the Internet, educationists have several responsibilities. Firstly, they should understand and critically analyse what the consequences of technology's influences on teaching and learning. Secondly, it is vital that all learners have at least a minimum level of access to the Internet if they are to be given opportunities to learn from one of the most important sources of knowledge since the printing press was developed. Thirdly, children need help in becoming civic-minded citizens of the digital age, in using its machinery in the service of some broader social purpose than simple entertainment. They need guidance in managing their new ability to connect instantly with other cultures. They need reminders about how to avoid the dangers of elitism and arrogance.

What elements of a culture should be selected for presentation to learners? This question lies at the very heart of education, where there has been a long-standing debate between proponents of 'cultural literacy', who seek a fairly narrow, canonical selection, and advocates of 'multicultural' approaches, who call for a broader, more inclusive selection (McClintock, 1995). ICT, with its facilitation of open access to multiple sources of knowledge and the individualization of learning, adds a new dimension. But is this what we want? What degree of variety can any society sustain? Technology introduces a new dimension into the issue of what should comprise the curriculum in any particular society. If access to diverse cultural literacies increases, then centripetal forces may well hold increasing sway over centrifugal forces in the future in determining the nature of the curriculum.

Advances in ICT also seriously call into question the traditional division of education into units of time (so many years of compulsory schooling, divided into so many days, divided into so many hours of class contact time), carried out in designated locations (schools, classrooms), taking place in groups of a particular composition (classes of a certain size and age, with a single teacher). These arrangements can be viewed as a means for synchronizing learners engaging in diverse activities in space and time. The new technologies open up options with respect to all of these arrangements. They have the capacity to radically transform human interaction by removing arbitrary barriers to interaction. In particular, they allow for the asynchronous use of space and time.

Undoubtedly, the culture of the school and of teaching will have to undergo dramatic change as education systems accommodate to the Information Age. This will be no easy shift to bring about. It will be particularly difficult in societies where teaching has been routinized and deskilled. Teachers of the future will need to be intelligent, highly educated, flexible, imaginative, technologically sophisticated, confident people who can assist students to manage their own learning. We must be aware that the opportunities afforded by ICT and its increasing role in all aspects of life will not be equally accessible to all members of a society, let alone to all societies. This means that there will be growing disparities in knowledge and basic skills between those who have access to technology and those who do not - ultimately, between

those who can pay and those who cannot. Issues of social justice will have to be addressed in parallel with the expansion of ICT into education, lest existing disadvantages become compounded.

For the developments outlined here to occur, high priority will have to be given to the pre-service and in-service training of teachers in various ICT approaches. Schools of the future will require the services of highly trained, flexible teachers who continue to be up-dated (and possibly re-credentialled) in their rapidly changing field. Teachers may well feel under threat by the new ICTs and the opportunities and challenges they pose. There is no denying that ICT, along with other changes that will take place in education in the future, will impact on all sectors of education, not least of which on teachers. However, as the International Commission on Education for the Twenty-first Century (UNESCO, 1996) points out, these developments do not at all diminish the role of teachers - quite the contrary - but they do change it profoundly and they offer the opportunities that must be seized. The Commission argues that it is therefore essential that teachers' initial training, and even more so their in-service training, should give them a real command of these new tools. They also need to be 'sensitized to the profound changes that modern technologies effect in our cognitive processes' (p.174).

Implementing new technology in schools is far from a straightforward matter, even when the surface logic is persuasive. Why is this so, and what can be done about it? In a recent analysis of 'technology refusal' in schools, Hodas (1993) points out that what is often overlooked is the fact that schools themselves are a technology, and that they are 'systems for preserving and transmitting information and authority, for inculcating certain values and practices while minimizing or eliminating others'. He argues that perhaps first and foremost, schools are organizations, and as such seek nothing so much as their own perpetuation. They are likely to experience change as a disruption, an intrusion, as a failure of their defences, particularly if it means that in order to implement it, their culture must alter its values and habits.

WORK

Drucker (1994) describes a century of profound change in the nature of work. At the start of the century, farmers and domestic servants comprised the largest group of workers. By the 1950s, however, industrial workers had become the largest single group in every developed country. By 1990 such workers had shrunk to one-fifth of the workforce and by 2010 they will be no more than one-tenth. This does not suggest a decline in manufacturing production; quite the contrary, as from 1970 to 1990 in the United States, for example, manufacturing output grew by 250 percent. It simply means that manufacturing has become increasingly automated and mechanized.

The change from farmer to factory worker required shifting from one set of manual skills to another. But today's new workers will be 'knowledge workers', who must shift from their manual skills to a set of theoretical and analytical knowledge that can be acquired only through formal schooling. Unfortunately, most people in developed and developing countries are poorly equipped to compete for these positions. They do not leave the current formal schooling system with the skills to enter knowledge jobs, nor do they have the skills or the values that will allow them to continue to change and adapt. Even the better students in our current systems may not meet the standards required of a knowledge-based society.

Increasingly, technology is placing a premium on particular work skills and rendering others obsolete. The Information Age, with its knowledge-based economy, demands a range of skills, including the ability to: (a) control complex systems by monitoring information about the condition of its parts; (b) flexibly operate in a range of social contexts - sometimes in face-to-face teams, sometimes in communication with others in diverse locations - often on a global scale, and sometimes in isolation from others: in short being able to work within a 'network organization'; (c) be self-managing and self-motivating (and, increasingly, self-employed); (d) adapt to change and acquire new skills, with its corollary of willingness to engage in lifelong learning to upgrade skills and knowledge; (e) work in small organizational units, with flat hierarchies and a focus on quality assurance

and customer care; (f) deal with widely distributed, very large information storage systems; and (g) independently identify, analyse and solve problems calling upon higher order thinking (Boyett, & Conn, 1991; Bridges, 1994; Graff, 1996; Jones, 1995; Jones, 1996; Kefalas, 1994; McClintock, 1995; OECD, 1989; Swerdlow, 1995; The World Bank, 1995; UNESCO, 1996; Wirth, 1992). Above all, according to Reich (1991), what will increasingly be required are the skills of a symbolic analyst.

The social entity known as a job is vanishing like a species that has outlived its evolutionary time, according to Bridges (1994). Advances in technology have automated the production line and all but eliminated traditional repetitive tasks. Jobs have become rigid solutions to a dynamic problem. In those sectors which are accommodating to the demands and opportunities of the information age, major changes are taking place in the workplace, compared with the mass production era. Table 1 summarizes these changes.

In short, knowledge-based economies place a premium on workers with high learning capabilities and with demonstrated competencies in handling information. These trends will increase the proportion of workers promoting change and will lead to further acceleration of the rate of change. Inevitably, this will lead to the exclusion of a growing proportion of the labor force from work, with attendant costs for individuals and for social cohesion. In the US, as Drucker (1994) notes, the shrinkage of manual jobs is, above all, a threat to America's most visible minority, the Blacks, whose biggest economic gains in the last 30 years came from moving into well-paid jobs in the unionized mass-production industries. These effects would be true of many other countries' minority populations. Social and educational policy will have to take account of growing disparities in the distribution of knowledge and information.

Table 1. Shifts from Mass Production to Information Age Workplace

Mass Production Workplace	***Information Age Workplace***
making a product	providing a service
making products for mass market	providing customized good and services for niche markets
standardized services with more or less routine production process	rapid responses to shifting demand
stable, narrowly defined jobs/tasks	comprehensive, open-ended jobs/tasks based on projects
requires minor responsibility	requires high responsibility & critical thinking
heavy supervision	little supervision
requires passive order taking	requires active individual initiative
hierarchical, vertical organizations	horizontal, flat, networked, administrative structures
specific responses to limited number of situations	creative solutions to increasingly non-routine problems
deviations handled by specialists	deviations handled by lowest level of specialist
low use of information and communications technology	high use of information and communications technology
completing tasks more important than continued improvement of performance	improving process as important as improving product
specific tasks independent of purpose in operation	work processes are integrated; increased overall ownership of product and process
computer systems often constrain and/or replace human skills	computer systems often used to complement and enhance workforce skills

(Sources: Alic, 1997, Bridges, 1994; Gee, Hull & Lankshear, 1996; Law, Knuth & Bergman, 1992; Reich, 1991; The Editors, *On the Horizon*, 1992).

The shift towards the knowledge-based economy has several other implications for education. Firstly, it is clear that lifelong education must become the norm. This trend is seen by some observers as leading businesses to augment, and in some cases displace, tertiary education (Davis & Botkin, 1994). This notion of corporate-based

learning will be a response to several factors, the shortening of product cycles, attempts to leverage the economic value of knowledge, collaborative work patterns, a shift in focus from teaching to learning, and the development of networked multimedia technology with its capacity to deliver self-paced 'just-in-time' training. The future may well see tertiary education institutions re-defining what it is that they best can provide for learners, and when they can provide this, compared with new models of 'on-the-job' training. Importantly, there will have to be a re-defining of the partnership between employers and educational institutions to ensure the integration of knowledge in the learner.

Secondly, the border between 'codified knowledge' and 'tacit knowledge' will undergo change, with more of the latter becoming the former. Codified knowledge is knowledge which can be transformed into information which can be easily transmitted through information infrastructures, compared with tacit knowledge which cannot easily be transferred because it has not been stated in an explicit form and is extremely sensitive to social context (Foray & Lundvall, 1996). Knowledge which can be codified and reduced to information can now be transmitted over long distances at very limited cost, thus speeding up the rate of change. This trend calls upon education systems to change their rules and infrastructures for recognizing people's specific competencies, including assessing their prior learning.

Thirdly with the shift towards the knowledge-based economy there will be an increasing need to re-align vocational education to the requirements for continuous problem solving and life-long learning. This may well see increased work-based learning, job-experience training and school-based enterprises. Whatever the mix of provisions, there can be little doubt that the traditional border between vocational and academic education will become increasingly blurred as the demands for knowledge workers at all levels of industry increases.

Fourthly, given that work provides an important source of meaning for many people (Guevara & Ord, 1996), but that in many societies there is less work (or, more correctly, there are fewer jobs to be carried out by humans) educators will have to re-appraise the ways in work which is portrayed in their teaching.

A final and related point is that the decline in demand for unskilled labor - especially in the most developed countries - will have the effect of excluding many people from participation in the workforce, thus undermining the self concepts of those individuals and threatening the social cohesion and security of those societies. Education systems will have to find effective ways to accommodate to this challenge in order to increase opportunities for all to benefit from the knowledge-based economy. As a corollary, it behoves societies to establish the conditions in which quality, high-value-added, knowledge-intensive jobs in sufficient numbers can be created.

CONCLUSION

Thispaper presents a brief analysis of five socio-political and technological trends that will pose major challenges for education in the 21st century. Firstly, there will be an increasing emergence of globalism, with a corresponding erosion of national sovereignty. Secondly, major demographic transitions will continue, with profound effects on the structure of societies and the transactions that occur within them. Thirdly, most societies will become more diverse, with an increasing range of subcultural options and pluralistic epistemologies. Fourthly, the revolution in information and communications technology will transform the nature of work, business, entertainment, leisure, interpersonal interactions, and community. Fifthly, globalization and technologization will interact to shift the emphasis away from mass production economies to Information Age economies which will place a premium on certain work skills and render others obsolete. It must be recognized that, as the principle of non-summativity suggests, the whole is greater than the sum of the parts and none of the above factors act in isolation from each other. For example, the cumulative effects of globalization, pluralization and technologization will lead many nations to redefining the nature of their school curricula.

In the face of such far-reaching and comprehensive shifts in society, it is no wonder that Giddens (1995) notes that the world we live in today is not subject to tight mastery, but that, on the contrary, 'it is one of dislocation and uncertainty, a

"runaway world"' (p.3). In such a transitionary world, human beings are quite literally faced with the task of *re-locating* themselves and their institutions - tasks which call upon psychological, social, cultural and economic adjustments which, in some contexts and for some individuals, are of considerable magnitude. In the absence of clear guidelines for planning their lives, many individuals experience feelings of confusion, powerlessness and a loss of identity. Educational institutions can reasonably be expected to assist with, if not lead, individuals and societies to cope with the transformations that will increasingly become imperative. But in order to play a constructive role in these tasks, they too must radically change. Unfortunately, it is questionable whether many have the capacity, let alone the will, to do so. As Reider Roll (1995), Secretary General of the International Council for Distance Education, points out, 'as the next decade unfolds, it will be the institutions in the education systems which can master the processes of change that will be more central and valuable to our societies' (p.12). This point is reiterated by Victor Ordonez (1996), Director of the Bangkok office of UNESCO, who asserts that 'the road to the future has taken dramatic turns, and unless the educational system of nations respond, they will go straight down the cliffs of irrelevance'. He is not optimistic that this will occur for 'no sector of society seems more conservative and chained to the past than the education sector' (p.7).

The consequences of thesocio-political and technological trends outlined in this paper for education are considerable: the why, where, how and what of education in the future will - or, as I have argued, should - undergo dramatic changes. Education systems will be challenged to transform their missions, their structures and their pedagogies. As education systems adapt to the trends there will be changes in (a) definitions of the 'educated person' and of the 'good life'; (b) access to education: formal and informal; (c) the nature of the curriculum: its content, the borders between subject domains, its explicit and implicit values, its sequencing, the integration of its components, choice and customization, accountability, the assessment of learning outcomes, and its responsiveness to different learning styles; (d) the sites of education: homes, schools, workplaces, and formal and informal settings; (e) the mix of control, governance and management of education: supranational, national, regional, and local community; (f) the roles of learners and

teachers; (g) the periodicities of schooling: its length and timing; and (h) the qualities of teachers and the nature of teacher education.

However, it would be wrong to think that education must slavishly follow every societal trend. Education both reflects and produces changes in its social contexts. While education systems can normally be expected to have some degree of synchronicity with the societies in which they are embedded, there can be no question that they should be restricted merely to reproducing their host societies. To accept such a credo would be to accept the legitimacy of schools in some circumstances collaborating in totalitarianism or engaging in practices which are universally held to be repugnant. As Papadopolous (1995) stresses,

> In the turbulent world of today ... education becomes the main vehicle for maintaining and transmitting the basic values on which the cohesion of future societies depends. A certain abstraction from its immediate environment is thus essential for education if it is to fulfill this role.
>
> This, of course, does not mean that education can be immune to the impact of conjuncturally driven decisions; and that it is important that educational systems should be equ ipped with greater flexibility and capacity to respond to new needs - which, admittedly, has not been their principal characteristic so far (p.495).

As well as cultural transmission, education should have as a major goal the liberation of human minds, both intellectually and politically - a mix of ideals that is admittedly, in some circumstances, extraordinarily difficult to achieve. The thesis of this paper is that most education systems are lagging behind broad societal trends. Never before has society and education been so asynchronous in so many different ways and in so many different places. Indeed, in many countries, education neither reflects societal trends, nor liberates its students to critically engage such trends. It is as though educational policy-makers and practitioners are content with preparing students for a world that no longer exists, let alone is likely to return in the future. This is not good enough.

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